AV-32D503
AV-32D303
AV-32D203

JVC

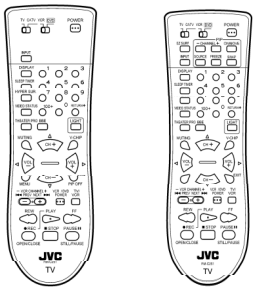
SERVICE MANUAL

COLOR TELEVISION

BASIC CHASSIS
GE

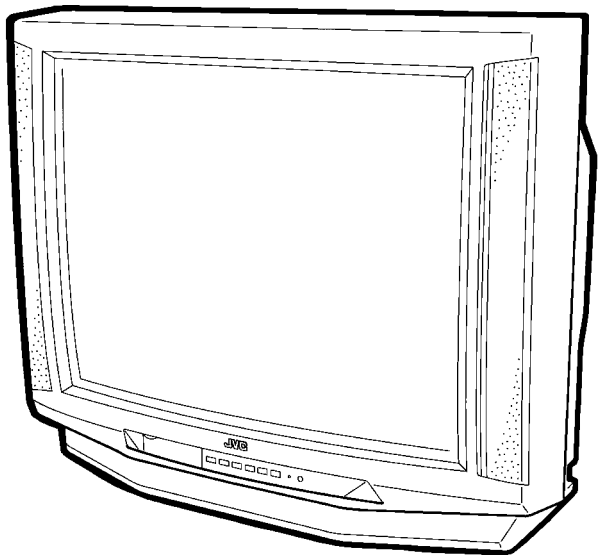
AV-32D503/Y /R /M
AV-32D303/Y /R /M
AV-32D203/Y /R /M

BBE



[RM-C252]
AV-32D303, 203

[RM-C251]
AV-32D503



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No.51947
May 2002

AV-32D503
AV-32D303
AV-32D203

SPECIFICATIONS

ITEMS	CONTENTS
Dimensions (W×H×D)	33-7/8"×27×21-5/8" (859mm×684mm×548mm)
Mass	114.4lbs / 52.0kg
TV System and Color system	
TV RF System	CCIR(M)
Color System	NTSC-M
Sound System	BTSC (Multi Channel Sound)
TV Receiving Channels and Frequency	
VL Band	(02～06) 54MHz～88MHz
VH Band	(07～13) 174MHz～216MHz
UHF Band	(14～69) 470MHz～806MHz
CATV Receiving Channels and Frequency	
Low Band	(02～06, A-8) by (02～06&01)
High Band	(07～13) by (07～13)
Mid Band	(A～1) by (14～22)
Super Band	(J～W) by (23～36)
Hyper Band	(W+1～W+28) by (37～64)
Ultra Band	(W+29～W+84) by (65～125)
Sub Mid Band	(A8, A4～A1) by (01, 96～99)
	(54MHz～804MHz)
TV/CATV Total Channel	180 Channels
Intermediate Frequency	
Video IF Carrier	45.75 MHz
Sound IF Carrier	41.25 MHz (4.5MHz)
Color Sub Carrier	3.58 MHz
Power Input	120V AC, 60Hz
Power Consumption	133W [AV-32D503]
	128W [AV-32D303, AV-32D203]
Picture Tube	32" (80cm) measured diagonally, Full Square
High Voltage	31kV±1.3kV (at zero beam current)
Speaker	2"×4-3/4" (5×12cm) Oval type×2
Audio Power Output	5W+5W
Input terminals	
INPUT1 Video	1Vp-p, 75Ω, RCA pin
S-Video	Mini din 4 pin
	Y : 1Vp-p, negative sync provided when terminated with 75Ω
	C : 0.286Vp-p, burst signal when terminated with 75Ω
Audio L/R	500mVrms (-4dBs), high impedance, RCA pin
INPUT2 Video	1Vp-p, 75Ω, RCA pin
Component (Y, Pb, Pr)	RCA pin
	Y : 1Vp-p, negative sync provided when terminated with 75Ω
	Pb/Pr : 0.7Vp-p, 75Ω
Audio L/R	500mVrms (-4dBs), high impedance, RCA pin
INPUT3 Video	1Vp-p, 75Ω, RCA pin
Audio L/R	500mVrms (-4dBs), high impedance, RCA pin
Audio Output	500mVrms (-4dBs), low Impedance, 1kHz when modulated 100%, RCA pin
AV Compu link Ⅲ interface	3.5mm mini jack
Antenna terminal	75Ω (VHF/UHF) Terminal, F-Type Connector
Remote Control Unit	RM-C251 (AA/R6/UM-3 battery×2) [AV-32D503]
	RM-C252 (AA/R6/UM-3 battery×2) [AV-32D303, AV-32D203]

Design & specifications are subject to change without notice.

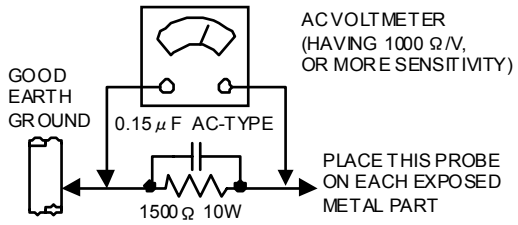
SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
4. **Use isolation transformer when hot chassis.**
   The chassis and any sub-chassis contained in some products are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some products when the HOT chassis is exposed.
5. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.
6. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).
7. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
8. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
9. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
10. **Isolation Check**
    (Safety for Electrical Shock Hazard)
    After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

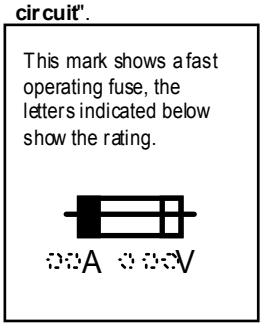
    (1) **Dielectric Strength Test**
    The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1100V AC (r.m.s.) for a period of one second.
    (. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
    This method of test requires a test equipment not generally found in the service trade.

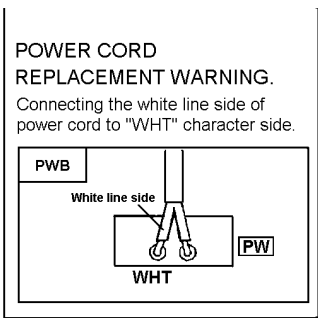
    (2) **Leakage Current Check**
    Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
    However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

    ● **Alternate Check Method**
    Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
    However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



11. **High voltage hold down circuit check.**
    After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.
    See item "**How to check the high voltage hold down circuit**".





AV-32D503
AV-32D303
AV-32D203

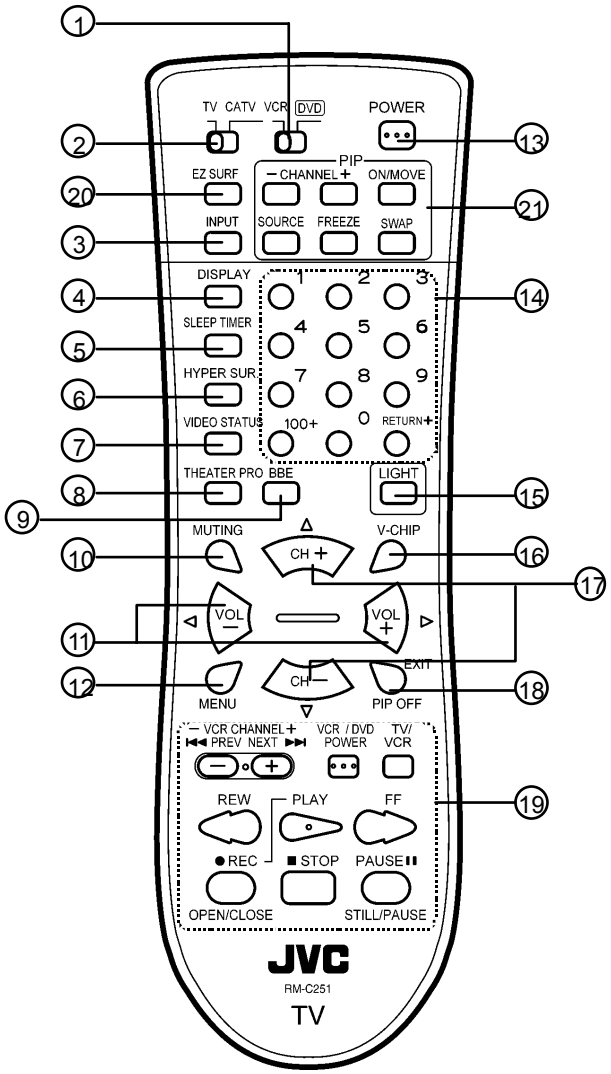
FEATURES

- Title TELE-TEXT broadcast of C1, C2, T1, and T2 formula is receivable.
- The voice multiplex function of the MTS system is built in.
- By the THEATER PRO function, a reality to which it is viewing and listening in the movie theater can be tasted.
- By the EZ SURF function, channel ID and a program name are displayed in the screen automatically [Only for AV-32D503].
- By the COMPU LINK Ⅲ function, operation interlocked with the DVD deck can be performed from remote control.
- By the three-line digital comb filter, the refreshed image can be seen.
- Two programs can be displayed on the screen by the 2 tuner PIP circuit [Only for AV-32D503].
- Expression of a favorite screen can be chosen by the VIDEO STATUS function.
- A program can be enjoyed with a powerful sound by the HYPER SURROUND function.
- Since the V chip is built in, it can choose, view and listen to a healthy program.
- The RETURN PLUS function is built in.
- A quick favorite program can be looked for by the HYPER-SCAN function.
- Since the component signal input terminal is equipped, it reappears direct without deteriorating the signal from DVD,.

FUNCTIONS

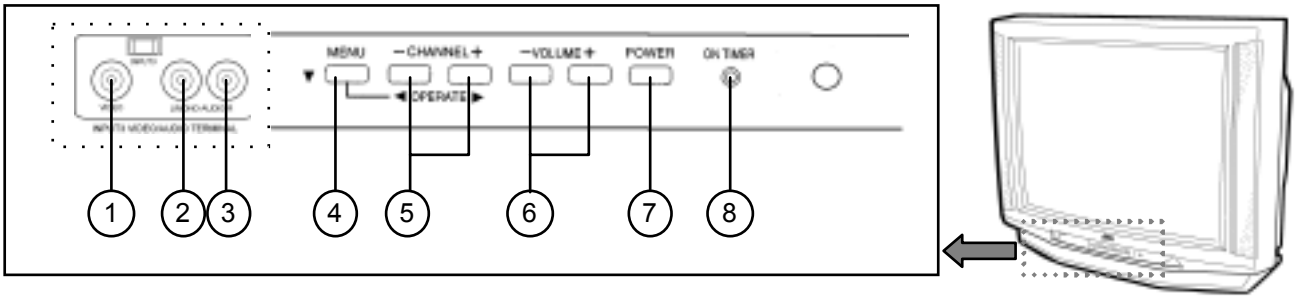
REMOTE CONTROL UNIT (RM-C251, RM-C252)

This illustration is written about RM-C251. There are no buttons of ⑳ EZ SURF and ㉑ PIP in the RM-C252.



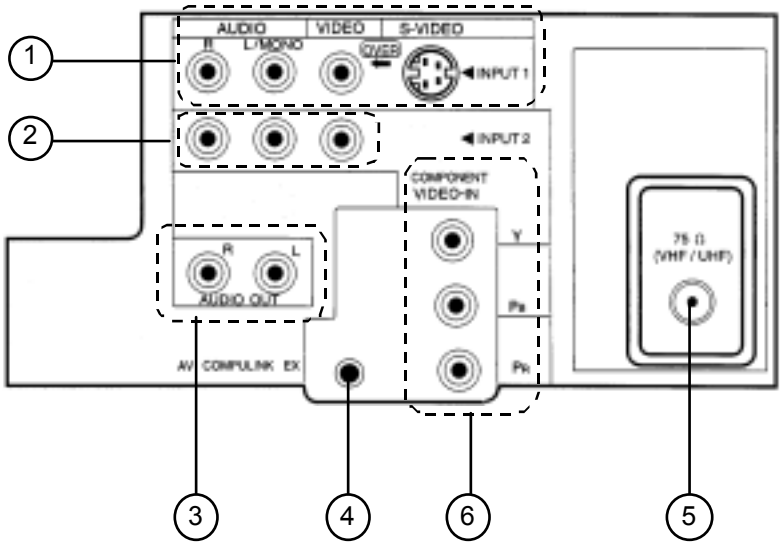
①	VCR / DVD KEY
②	TV / CATV KEY
③	INPUT KEY
④	DISPLAY KEY
⑤	SLEEP TIMER KEY
⑥	HYPER SURROUND KEY
⑦	VIDEO STATUS KEY
⑧	THEATER PRO KEY
⑨	BBE KEY
⑩	MUTING KEY
⑪	VOLUME -/+ and CURSOR ◀/▶ KEY (In the MENU screen)
⑫	MENU KEY
⑬	POWER KEY
⑭	CHANNEL NUMBER KEY
⑮	LIGHT KEY
⑯	V-CHIP KEY
⑰	CHANNEL +/— and CURSOR ▲/▼ KEY (In the MENU screen)
⑱	EXIT KEY
⑲	VCR CONTROL KEY
⑳	EZ SURF KEY [Only for RM-C251]
㉑	PIP CONTROL KEY [Only for RM-C251]

FRONT PANEL CONTROLS



① INPUT 3 VIDEO TERMINAL	⑥ VOLUME −/+ KEY
② INPUT 3 AUDIO L TERMINAL	⑦ POWER KEY
③ INPUT 3 AUDIO R TERMINAL	⑧ ON TIMER / POWER LED
④ MENU KEY, MENU ▼ KEY	
⑤ CHANNEL −/+ KEYS MENU ◀ / ▶ KEYS	

REAR TERMINAL



① INPUT 1 TERMINAL (S-VIDEO, V, L, R)

② INPUT 2 TERMINAL (V, L, R)

③ AUDIO OUTPUT TERMINAL

④ AV COMPULINK Ⅲ TERMINAL

⑤ ANTENNA TERMINAL

⑥ INPUT2 COMPONENT SIGNAL TERMINAL (Y, P_B, P_R)

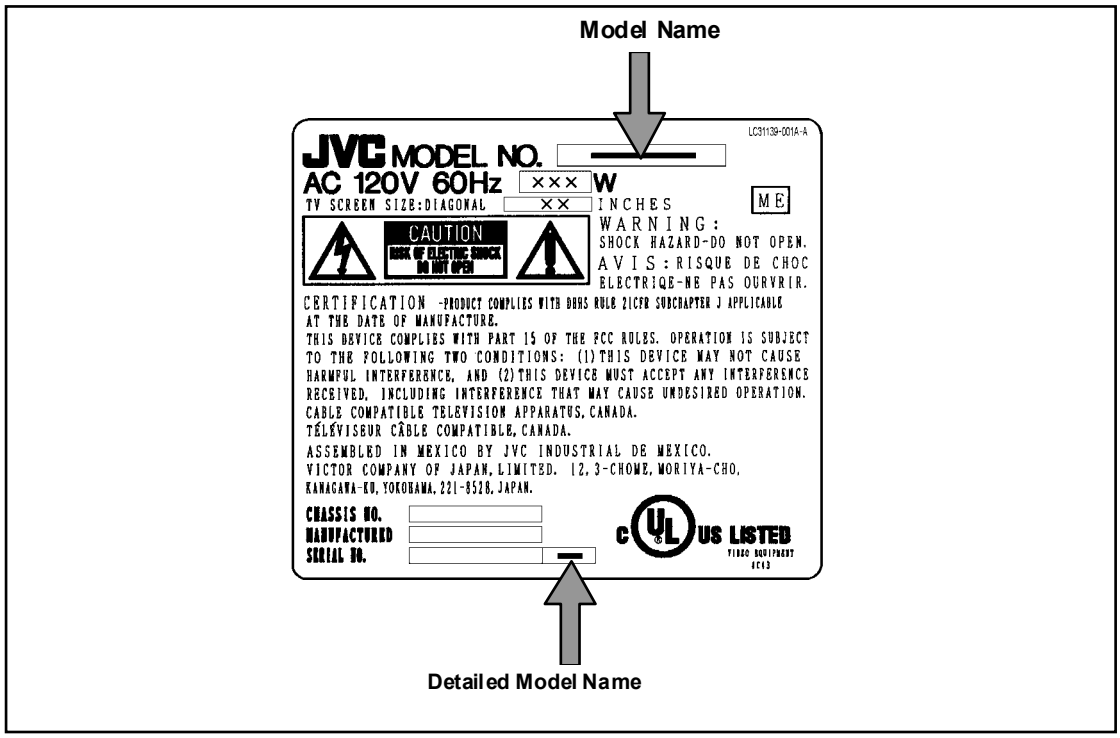
AV-32D503
AV-32D303
AV-32D203

MAIN DIFFERENCE LIST

PARTS NAME	MODEL	/Y	/R	/M
ITC TUBE (Inc. DY, PC MAGNET, WEDGE)	AV-32D503	A80AKB50X04	A80AEJ15X01	A80JUA061X06
MAIN PWB		SGE-1003A-M2	SGE-1022A-M2	SGE-1021A-M2
CRT SOCKET PWB		SGE-3004A-M2	SGE-3007A-M2	SGE-3006A-M2
PIP PWB		SGE-5001A-M2	←	←
E-COAXIAL ASSY		WJX0014-002A	←	←
CONTROL KNOB		LC20217-005B-A	←	←
JVC MARK		CM48006-007-C	←	←
FRONT CABI. ASSY		LC10641-005B-A	←	←
DOOR		LC20409-005B-A	←	←
REMOCON UNIT		RM-C251-1H	←	←
ITC TUBE (Inc. DY, PC MAGNET, WEDGE)	AV-32D303	A80AKB50X04	A80AEJ15X01	A80JUA061X06
MAIN PWB		SGE-1006A-M2	SGE-1028A-M2	SGE-1027A-M2
CRT SOCKET PWB		SGE-3004A-M2	SGE-3007A-M2	SGE-3006A-M2
PIP PWB		×	×	×
E-COAXIAL ASSY		×	×	×
CONTROL KNOB		LC20217-005B-A	←	←
JVC MARK		CM48006-007-C	←	←
FRONT CABI. ASSY		LC10641-005B-A	←	←
DOOR		LC20409-005B-A	←	←
REMOCON UNIT		RM-C252-1H	←	←
ITC TUBE (Inc. DY, PC MAGNET, WEDGE)	AV-32D203	A80AKB50X04	A80AEJ15X01	A80JUA061X06
MAIN PWB		SGE-1006A-M2	SGE-1028A-M2	SGE-1027A-M2
CRT SOCKET PWB		SGE-3004A-M2	SGE-3007A-M2	SGE-3006A-M2
PIP PWB		×	×	×
E-COAXIAL ASSY		×	×	×
CONTROL KNOB		LC20217-001C-A	←	←
JVC MARK		CM48006-006-C	←	←
FRONT CABI. ASSY		LC10641-001G-A	←	←
DOOR		LC20409-001D-A	←	←
REMOCON UNIT		RM-C252-1H	←	←

HOW TO IDENTIFY MODELS

How to recognize from the appearance of the model concerned is written below. Please distinguish from several contents currently printed on the rating label.



	Model Name	Detailed Model Number
AV-32D503 /Y	AV-32D503	Y
AV-32D503 /R		R
AV-32D503 /M		M
AV-32D303 /Y	AV-32D303	Y
AV-32D303 /R		R
AV-32D303 /M		M
AV-32D203 /Y	AV-32D203	Y
AV-32D203 /R		R
AV-32D203 /M		M

AV-32D503
AV-32D303
AV-32D203

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

- Unplug the power plug.

1. As shown in Fig.2, remove the **12** screws marked Ⓐ .
2. Remove the rear cover toward you.

Note :

When reinstalling the rear cover, carefully push it inward after inserting the chassis into the rear cover groove.

REMOVING THE CHASSIS BASE

- After removing the rear cover.

1. Slightly raise the both sides of the chassis base by hand, and remove the **2** claws marked Ⓑ (Fig.1 and Fig.2) under the both sides of the chassis from the chassis rail.
2. As shown in Fig.1, draw the chassis base backward along the chassis rail marked Ⓒ in the arrow direction marked Ⓓ (Fig.2.). (If necessary, detach the wire clamp, connector's etc.)

Note :

When conducting a check with power supplied, be sure to confirm that the CRT earth wire is connected to the CRT SOCKET PWB and the MAIN PWB.

REMOVING THE TERMINAL BOARD

- After removing the rear cover.

1. As shown in Fig.2, remove the **4** screws marked Ⓔ .
2. When you pull out the TERMINAL BOARD, it can be removed.

REMOVING THE FRONT CONTROL PW BOARD

- After removing the rear cover and chassis base .

1. As shown in Fig.2, remove the **2** screws marked Ⓕ attached the FRONT CONTROL PWB with the front cabinet.
2. Then remove the FRONT CONTROL PWB.

REMOVING THE FRONT AV IN PW BOARD

- After removing the rear cover and chassis base.

1. As shown in Fig.2, remove the **2** screws marked Ⓖ .
2. Then remove the FRONT AV IN PWB.

REMOVING THE SPEAKER

- After removing the rear cover and chassis base.

1. As shown in Fig.2, remove the **4** screws marked Ⓗ .
2. Follow the same steps when removing the other hand speaker.

CHECKING THE MAIN PW BOARD

1. To check the backside of the MAIN PW Board.
   (1) Pull out the chassis base. (Refer to REMOVING THE CHASSIS BASE).
   (2) Erect the chassis vertically so that you can easily check from the backside of the MAIN PWB.

CAUTION

- When erecting the chassis, be careful so that there will be no contacting with other PWB.
- Before turning on power, make sure that the CRT earth wire and other connectors are properly connected.

WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

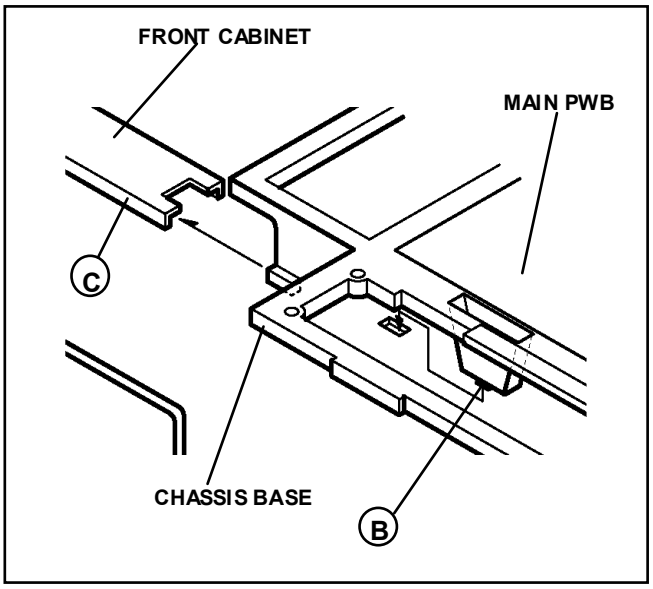
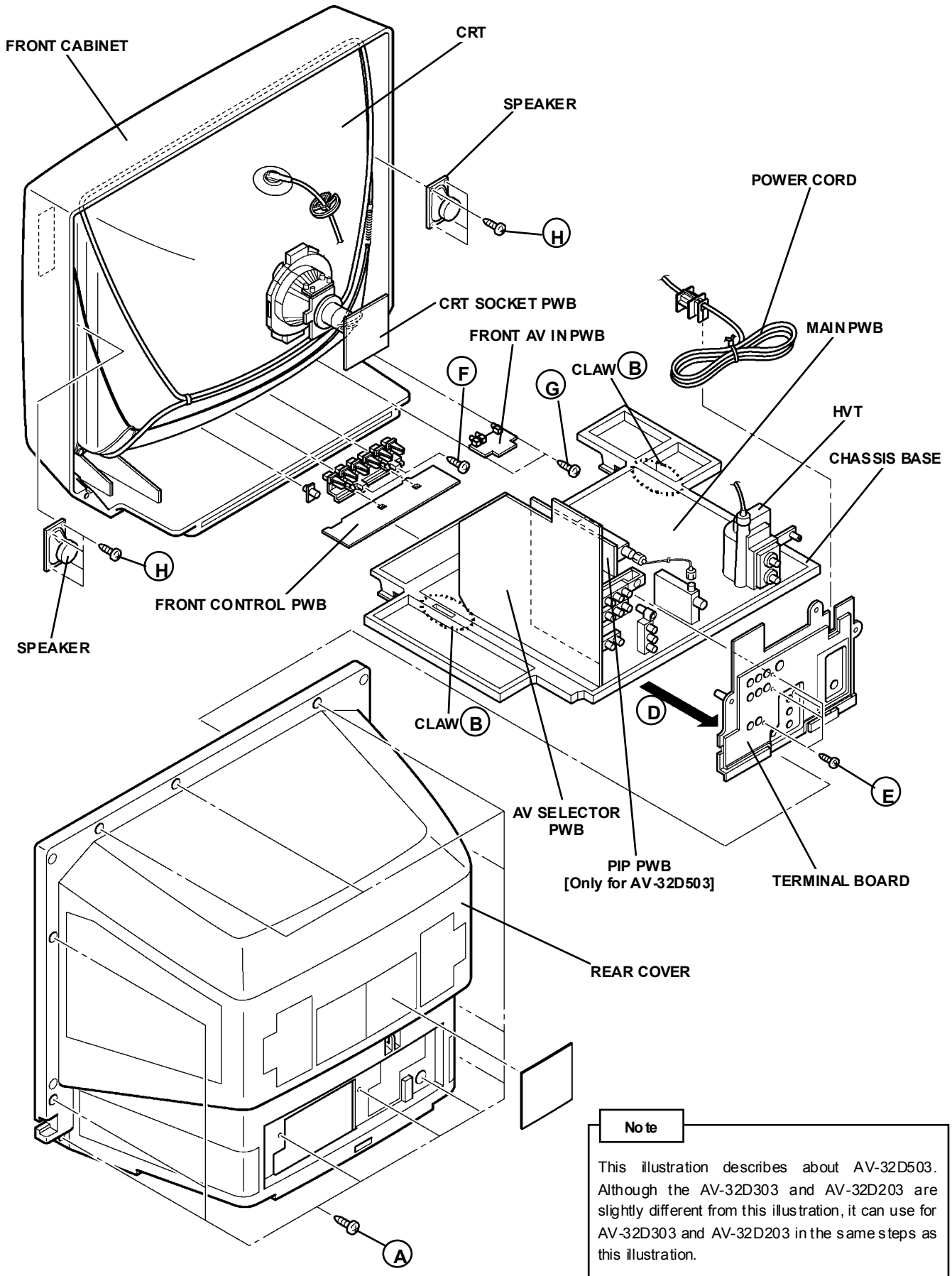


Fig. 1



Note

This illustration describes about AV-32D503. Although the AV-32D303 and AV-32D203 are slightly different from this illustration, it can use for AV-32D303 and AV-32D203 in the same steps as this illustration.

Fig.2

AV-32D503
AV-32D303
AV-32D203

MEMORY IC REPLACEMENT

1. Memory IC

This model uses the memory IC.
This memory IC stores data for proper operation of the video/chroma and deflection circuits.
When replacing, be sure to use the IC containing initial setting data.

2. Memory IC replacement procedure

(1) Power off
Switch off the power and disconnect the power plug from the AC outlet.

(2) Replace the memory IC
Be sure to use the memory IC written with the initial setting values.

(3) Power on
Connect the power plug to the AC outlet and switch on the power.

(4) System constant check and setting
①Press the **SLEEP TIMER** key and set SLEEP TIMER for 「0 min」.
②Before disappear the display of SLEEP TIMER settings, simultaneously press the **DISPLAY** key and **VIDEO STATUS** key of the remote control unit.
The SERVICE MENU screen of Fig.1 will be displayed.
③While the SERVICE MENU is displayed, select the SYSTEM(SYS) item with **CURSOR** ▼/▲ key and go into with ◀ / ▶ keys. Then the SYSTEM mode screen will be displayed as shown in Fig.2.
④Refer to the table of SYSTEM CONSTANT given in page later, and check the each item. If the value is different, select the setting item with the **CURSOR** ▼ /▲key, and setting with the **CURSOR** ◀/ ▶ keys. (The letters of the selected item are displayed in yellow.)
⑤When adjustment has completed, the values store into memory IC automatically.
⑥Press the **EXIT** key twice to return to the normal screen.

SERVICE MENU

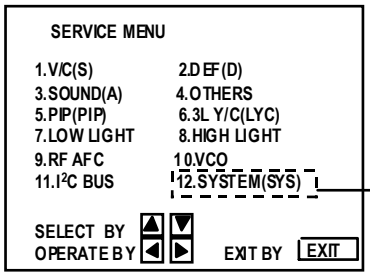


Fig.1

12. SYSTEM (SYS) MODE

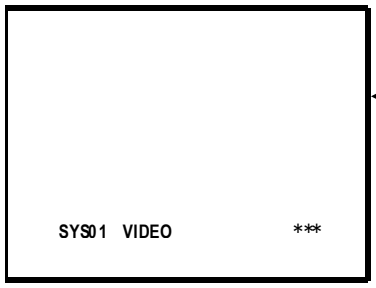


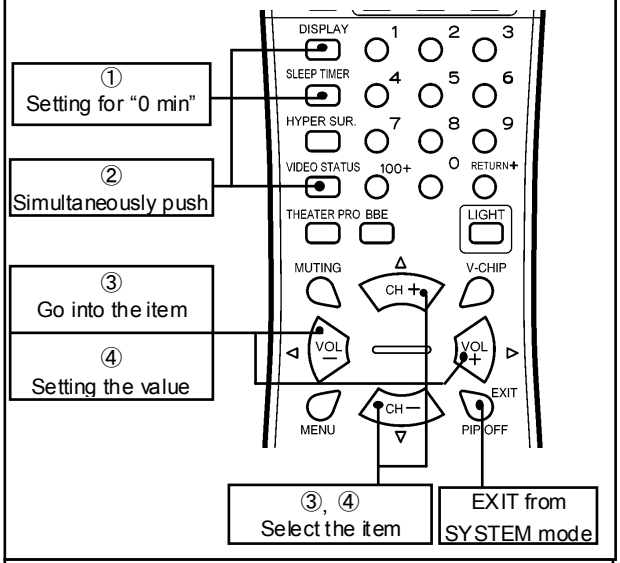
Fig.2

(5) Receiving channel setting
Refer to the OPERATING INSTRUCTIONS and set the receive channels (Channels Preset) as described.

(6) User settings
Check the user setting items according to the Table 2 given in page later.
Where these do not agree, refer to the OPERATING INSTRUCTIONS and set the items as described.

(7) SERVICE MENU setting
Verify what to set in the SERVICE MENU, and set whatever is necessary (Fig.1). Refer to the SERVICE ADJUSTMENT for setting.

KEY ASSIGNMENT OF REMOTE CONTROL UNIT



Although this illustration of remote control unit is written about RM-C251 (AV-32D503), it can use for operating RM-C252 (AV-32D303, 203) as same key assignment.

VALUES OF SYSTEM CONSTANT (TABLE 1)

ITEM	CONTENTS	VARIABLE RANGE	INITIAL SETTING VALUE	
			AV-32D503	AV-32D303, 203
SYS01	VIDEO IN	0～4	3	3
SYS02	PIP	0～1	1	0
SYS03	3D Y/C	0～1	0	0
SYS04	Y CV	0～1	1	1
SYS05	CCD PCHK	0～1	1	1
SYS06	PURITY	0～1	0	0
SYS07	VM	0～1	0	0
SYS08	NOISE CR	0～1	0	0
SYS09	CLR TEMP	0～1	1	1
SYS10	THEATER	0～1	1	1
SYS11	THEATER PRO	0～1	1	1
SYS12	BBE	0～1	1	1
SYS13	HYP SURR	0～1	1	1
SYS14	16:9 MD	0～1	0	0
SYS15	HYP SCAN	0～1	1	1
SYS16	EZ SURF	0～1	1	0
SYS17	ID DISP	0～1	1	1
SYS18	COMPULINK	0～1	1	1
SYS19	CCD	0～1	1	1
SYS20	VCHIP	0～1	1	1
SYS21	VCHIP CA	0～1	1	1
SYS22	JVC LOGO	0～1	1	1
SYS23	CMP IN	0～1	1	1
SYS24	CXA1875	0～1	0	0

AV-32D503
AV-32D303
AV-32D203

VALUES OF USER SETTING ITEMS (TABLE2)

Setting of switches on front panel and remote control unit

ITEM	INITIAL SETTING VALUE	ITEM	INITIAL SETTING VALUE
POWER	OFF	DISPLAY	OFF
CHANNEL	CABLE CH-02	VIDEO STATUS	DYNAMIC
VOLUME	10	PIP SOURCE	CABLE CH-04 [Only AV-32D503]
INPUT	TV	PIP POSITION	Left lower side [Only AV-32D503]
HYPER SURROUND	OFF	SLEEP TIMER	0
BBE	ON		

Setting of MENU screen

PICTURE ADJUST		**INITIAL SETUP**	
TINT	CENTER	LANGUAGE	ENG
COLOR	CENTER	FRONT PANEL LOCK	OFF
PICTURE	+8	V2 COMPONENT-IN	NO
BRIGHT	CENTER	AUTO SHUT OFF	OFF
DETAIL	+10	XDS I D	ON
COLOR TEMPERATURE	HIGH	CLOSED CAPTION	OFF
NOISE MUTING	ON		CAPTION : CC1
			TEXT : T1
SOUND ADJUST		AUTO TUNER SET UP	TUNER MODE : CABLE
BASS	CENTER	CHANNEL SUMMARY	Unnecessary to set
TREBLE	CENTER	V-CHIP	OFF
BALANCE	CENTER	SET US TV RATINGS	ALL CLEAR
MTS	STEREO	SET MOVIE RATINGS	ALL CLEAR
CLOCK / TIMERS		SET CANADIAN RATINGS ENG	ALL CLEAR
SET CLOCK	MANUAL	SET CANADIAN RATINGS FRE	ALL CLEAR
	TIME ZONE : PACIFIC	UNRATED	VIEW
	D.S.T : OFF	SET LOCK CODE	“0000”
ON/OFF TIMER	OFF		

SERVICE ADJUSTMENTS

BEFORE STARTING SERVICE ADJUSTMENT

1. **There are 2 way of adjusting this TV: One is with the remote control unit and the other is the conventional method using adjustment parts and components.**
2. **The adjustment with the REMOTE CONTROL UNIT is made on the basis of the initial setting values. The setting values which adjust the screen to its optimum condition may differ from the initial setting values.**
3. Make sure that connection is correctly made to AC power source.
4. Turn on the power of the set and equipment before use, and start the adjustment procedures after waiting at least 30 minutes.
5. Unless otherwise specified, prepare the most suitable reception or input signal for adjustment.
6. Never touch any adjustment parts, which are not specified in the list for this adjustment VRs, transforms, condensers, etc.
7. Preparation for adjustment
   Unless otherwise specified in the adjustment instructions, preset the following functions with the REMOTE CONTROL UNIT.

User menu preset value

MENU ITEM	PRESET VALUE
VIDEO STATUS	STANDARD
TINT, COLOR, PICTURE BRIGHT, DETAIL	CENTER
NOISE MUTING	OFF
COLOR TEMPERATURE	LOW
PIP [Only for AV-32D503]	OFF
BASS, TREBLE, BALANCE	CENTER
HYPER SURROUND	OFF
MTS	STEREO

MEASURING INSTRUMENT AND FIXTURES

1. DC voltmeter (or digital voltmeter)
2. Oscilloscope
3. Signal generator (Pattern generator) [NTSC]
4. Remote control unit
5. TV audio multiplex signal generator
6. Frequency counter

ADJUSTMENT ITEMS

BASIC ADJUSTMENT

- Check of B1 power supply
- MAIN / SUB VCO adjustment
- RF AGC adjustment
- FOCUS adjustment

DEFLECTION CIRCUIT ADJUSTMENT

- V. CENTER / V SIZE adjustment
- H SIZE / H POSITION / SIDE PINCUSHION adjustment

VIDEO / CHROMA CIRCUIT ADJUSTMENT

- WHITE BALANCE adjustment ～LOW LIGHT～
- WHITE BALANCE adjustment ～HIGH LIGHT～
- SUB BRIGHT adjustment
- SUB CONTRAST adjustment
- SUB COLOR adjustment
- SUB TINT adjustment

PIP CIRCUIT ADJUSTMENT

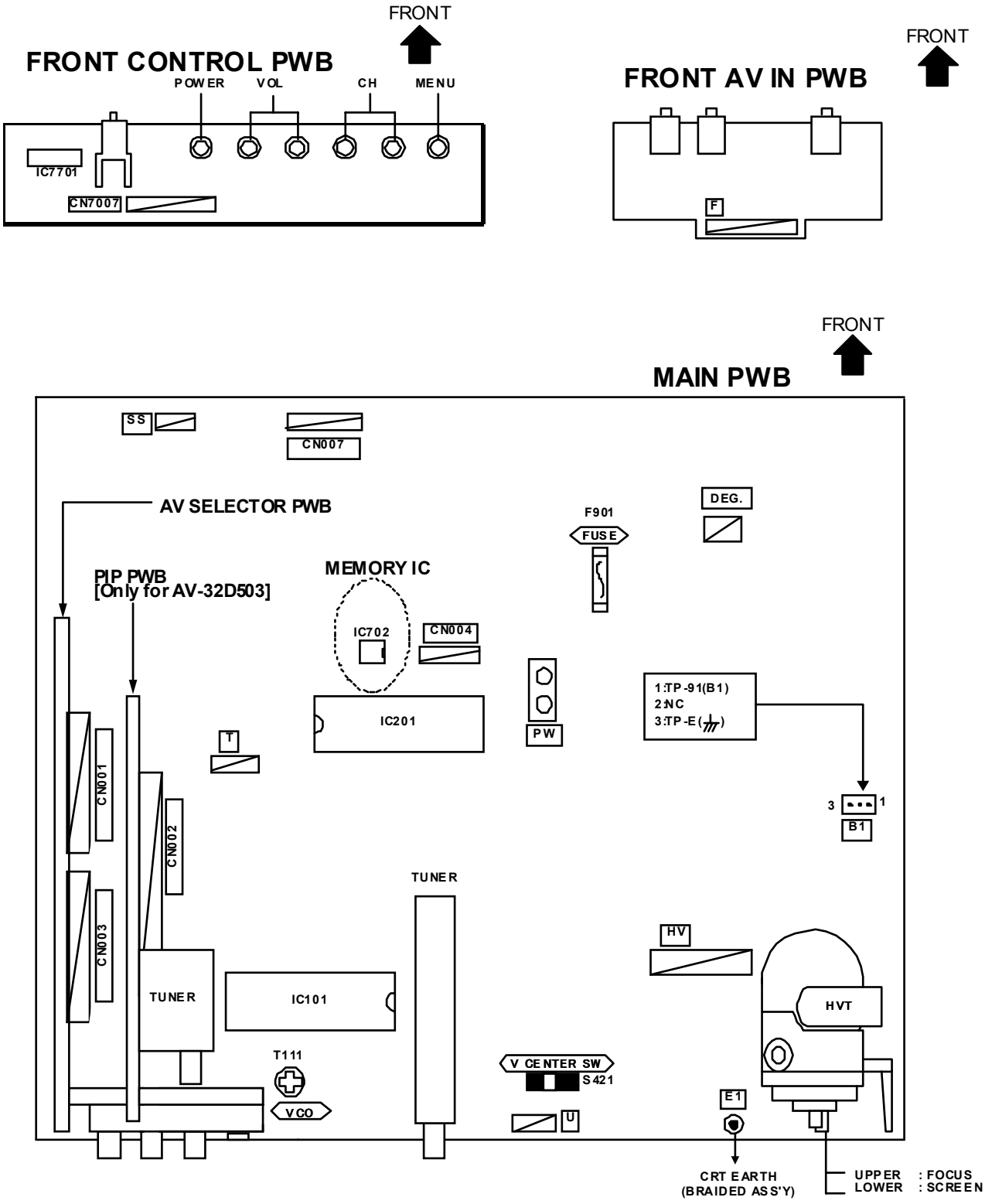
- WHITE BALANCE adjustment ～HIGH LIGHT～
- DISPLAY POSITION adjustment

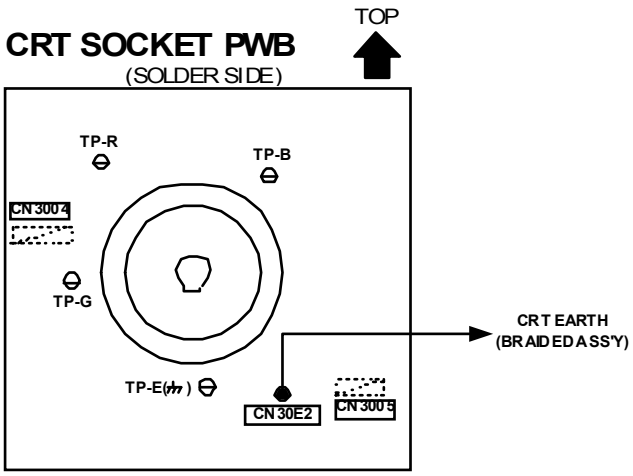
MTS CIRCUIT ADJUSTMENT

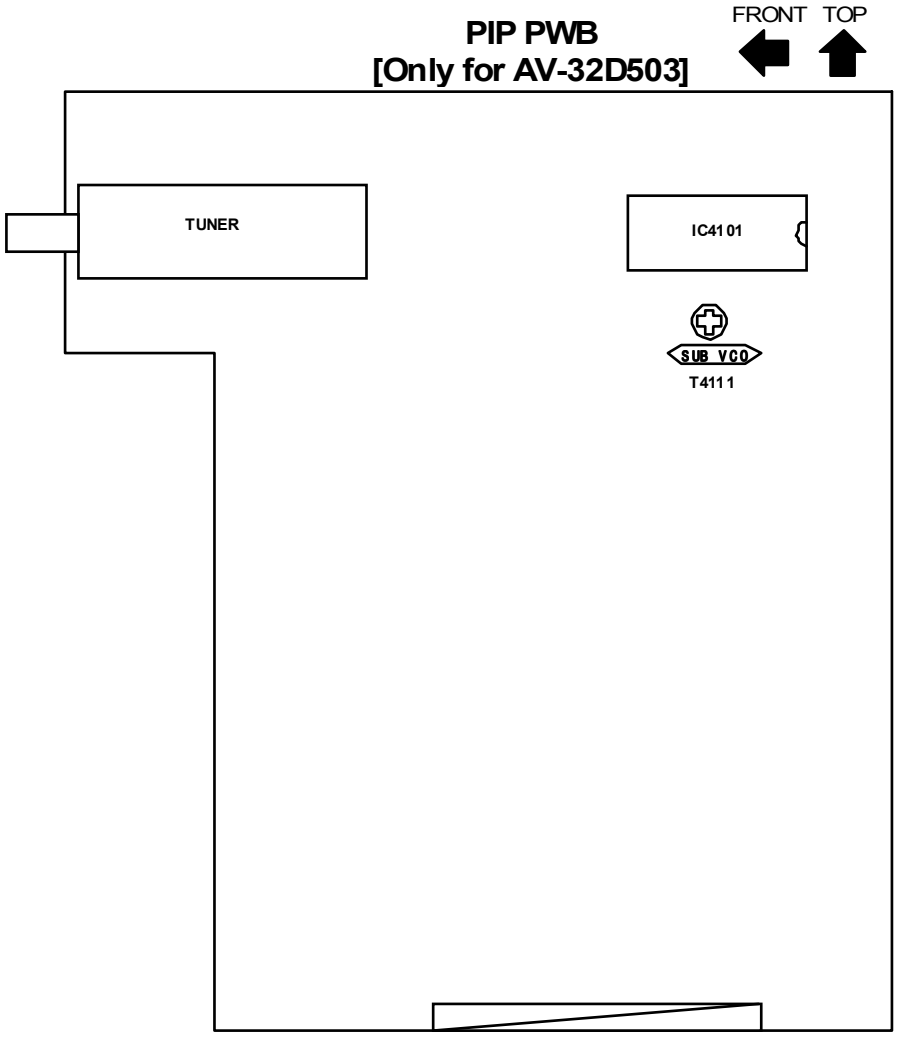
- INPUT LEVEL check
- SEPARATION adjustment

AV-32D503
AV-32D303
AV-32D203

ADJUSTMENT LOCATIONS




CRT SOCKET PWB
(SOLDER SIDE)
TOP
TP-R
TP-B
CN3004
TP-G
CRT EARTH
(BRAIDED ASS'Y)
TP-E
CN30E2
CN3005


PIP PWB
[Only for AV-32D503]
FRONT
TOP
TUNER
IC4101
SUB VCO
T4111

AV-32D503
AV-32D303
AV-32D203

BASIC OPERATION OF SERVICE MENU

1. TOOL OF SERVICE MENU OPERATION

Operate the SERVICE MENU with the REMOTE CONTROL UNIT.

2. SERVICE MENU ITEMS

With the SERVICE MENU, various settings (adjustments) can be made, and they are broadly classified in the following items of adjustments.

(1) V/C(S) ····· VIDEO / CHROMA related circuit adjustment mode
(2) DEFLECTION(D) ····· DEFLECTION related circuit adjustment mode
(3) SOUND(A) ····· SOUND related circuit adjustment mode
(4) OTHERS(F) ····· Whole system related items adjustment mode
(5) PIP(PIP)[Only for AV-32D503] ····· PIP related circuit adjustment mode
(6) 3L Y/C(LYC) ····· 3 line YC separation related circuit adjustment mode
(7) LOW LIGHT ····· White balance of "LOW LIGHT" adjustment mode
(8) HIGH LIGHT ····· White balance of "HIGH LIGHT" adjustment mode
(9) RF AFC ····· RF AFC related circuit adjustment mode
(10) VCO ····· VCO related circuit adjustment mode
(11) I^2C BUS ····· I^2C bus related circuit adjustment mode **[Fixed on]**
(12) SYSTEM(SYS) ····· This mode is used when setting up the whole system.

3. BASIC OPERATION OF SERVICE MENU

(1) How to enter SERVICE MENU

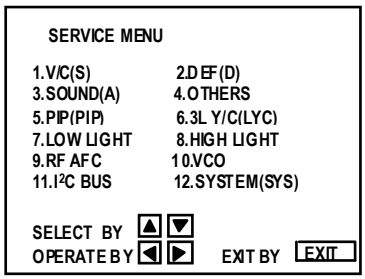
Press the **SLEEP TIMER** key and set the **SLEEP TIMER** for **[0 MIN]**.

Then press the **DISPLAY** key and the **VIDEO STATUS** key of the remote control unit simultaneously, and the SERVICE MENU screen will be displayed as shown below.

(2) Selection of SUB MENU SCREEN

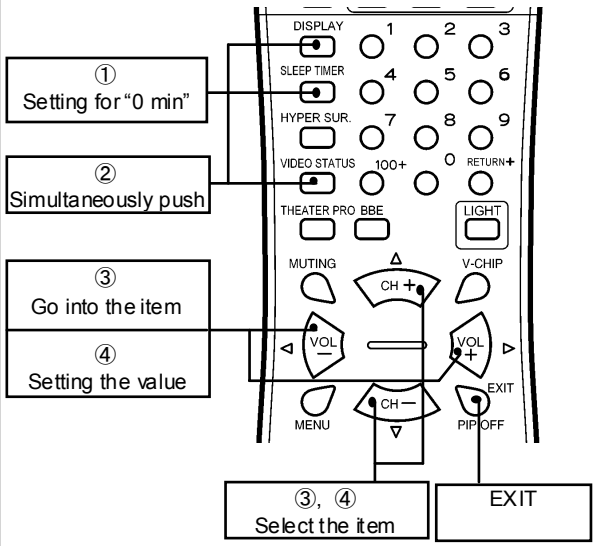
In SERVICE MENU, press the **CURSOR ▲/▼** key to select any of the SUB MENU items. (The letters of the selected items are displayed in yellow)

If an item like to set up becomes yellow, the **CURSOR ◀ / ▶** key will be pushed and it will go into the mode.

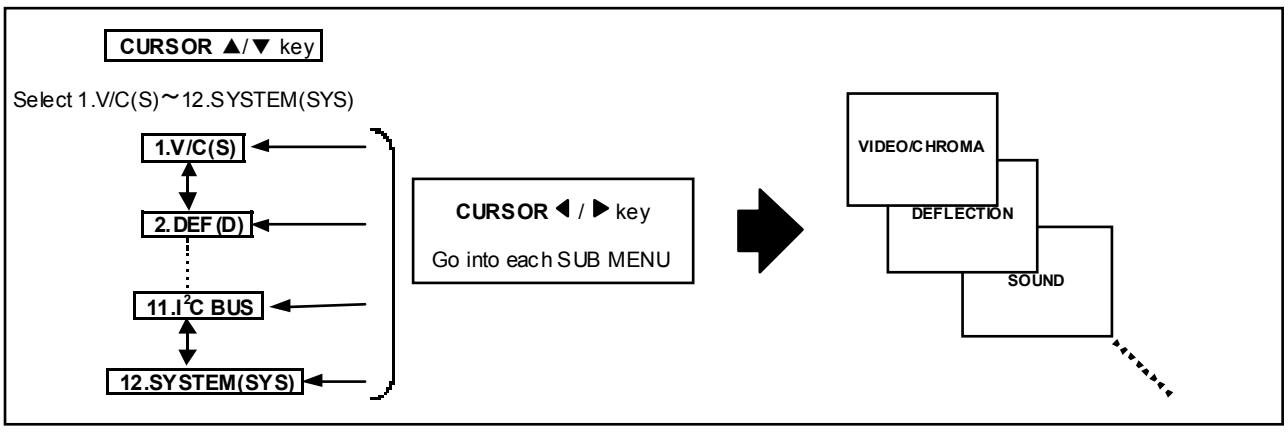


SERVICE MENU

KEY ASSIGNMENT OF REMOTE CONTROL UNIT



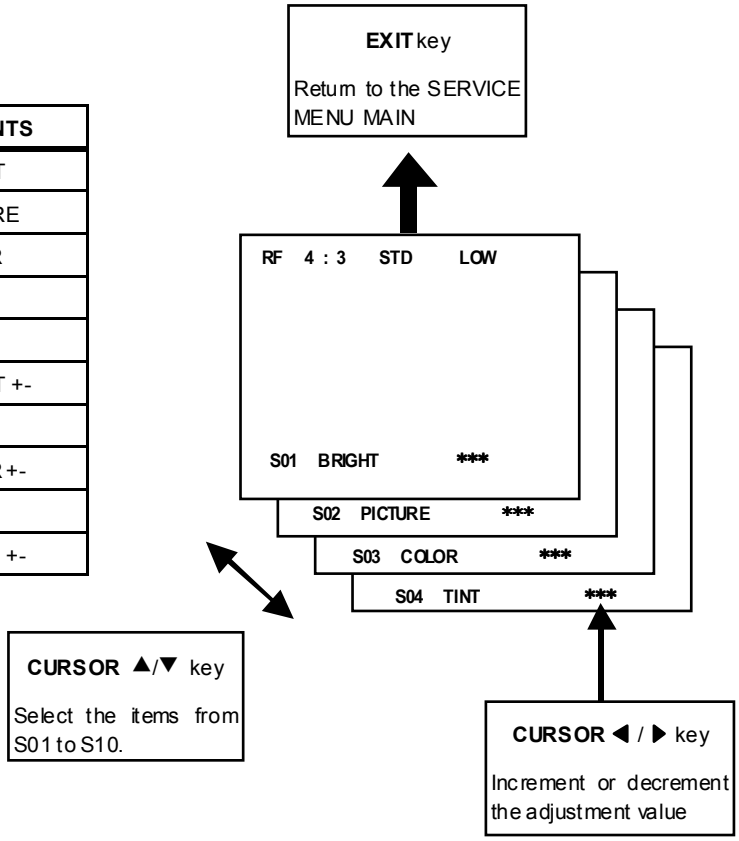
Although this illustration of remote control unit is written about RM-C251 (AV-32D503), it can use for operating RM-C252 (AV-32D303, 203) as same key assignment.



(3) Method of Setting

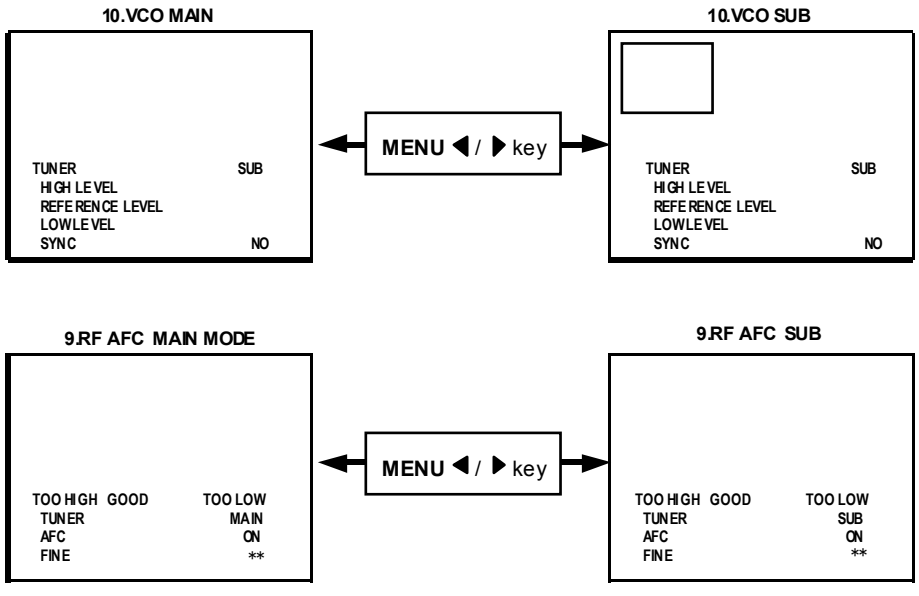
For example, the operation in the case of setting up VIDEO/CHROMA is expressed below.

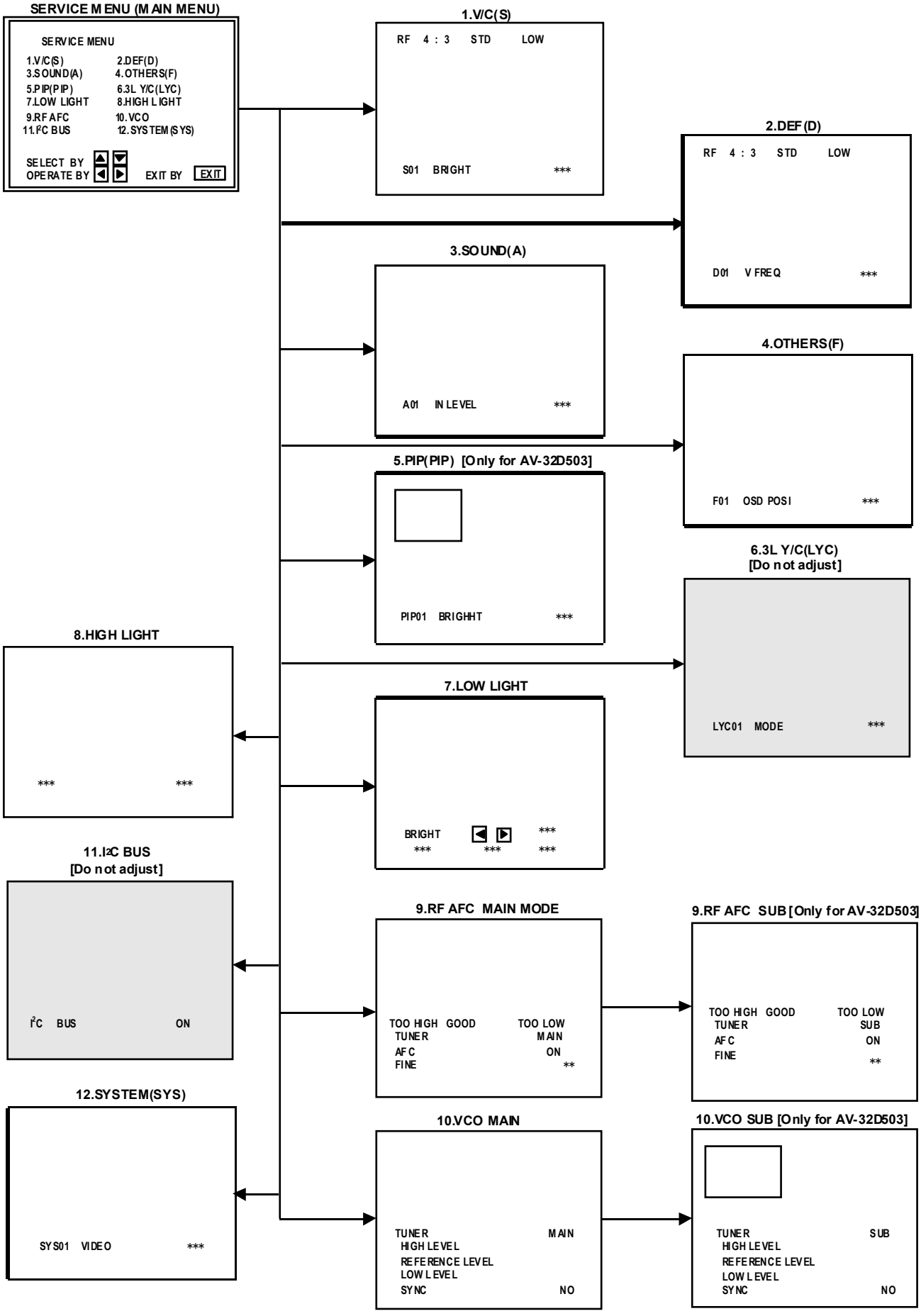
ITEM	CONTENTS
S01	BRIGHT
S02	PICTURE
S03	COLOR
S04	TINT
S05	DETAIL
S06	BRIGHT +-
S07	PICT +-
S08	COLOR +-
S09	TINT +-
S10	DETAIL +-



(4) Others [Only for AV-32D503]

If go into the 9.RF AFC and 10.VCO items, there will be display the RF AFC MAIN screen and VCO MAIN screen.
Then press the **CURSOR** ◀ / ▶ key, the RF AFC SUB screen and VCO SUB screen is displayed.




SERVICE MENU (MAIN MENU)
SERVICE MENU
1.V/C(S) 2.DEF(D)
3.SOUND(A) 4.OTHERS(F)
5.PIP(PIP) 6.3L Y/C(LYC)
7.LOW LIGHT 8.HIGH LIGHT
9.RF AFC 10.VCO
11.I²C BUS 12.SYSTEM(SYS)
SELECT BY
OPERATE BY
EXIT BY EXIT
1.V/C(S)
RF 4 : 3 STD LOW
S01 BRIGHT ***
2.DEF(D)
RF 4 : 3 STD LOW
D01 V FREQ ***
3.SOUND(A)
A01 IN LEVEL ***
4.OTHERS(F)
F01 OSD POSI ***
5.PIP(PIP) [Only for AV-32D503]
PIP01 BRIGHHT ***
6.3L Y/C(LYC)
[Do not adjust]
LYC01 MODE ***
8.HIGH LIGHT
*** ***
7.LOW LIGHT
BRIGHT ***
*** *** ***
11.I²C BUS
[Do not adjust]
I²C BUS ON
9.RF AFC MAIN MODE
TOO HIGH GOOD TOO LOW
TUNER MAIN
AFC ON
FINE **
9.RF AFC SUB [Only for AV-32D503]
TOO HIGH GOOD TOO LOW
TUNER SUB
AFC ON
FINE **
12.SYSTEM(SYS)
SYS01 VIDEO ***
10.VCO MAIN
TUNER MAIN
HIGH LEVEL
REFERENCE LEVEL
LOW LEVEL
SYNC NO
10.VCO SUB [Only for AV-32D503]
TUNER SUB
HIGH LEVEL
REFERENCE LEVEL
LOW LEVEL
SYNC NO

INITIAL SETTING VALUE OF SERVICE MENU

1. **Adjustment of the SERVICE MENU is made on the basis of the initial setting values ; however, the new setting values which set the screen in its optimum condition may differ from the initial setting.**
2. **Do not change the initial setting values not listed in "ADJUSTMENT".**

V / C(S) MODE

No	Setting item	Variable range	RF		S-VIDEO COMPOSITE VIDEO
			STANDARD	THEATER	STANDARD
S01	BRIGHT	0～127	64	--	--
S02	PICTURE	0～127	55	--	--
S03	COLOR	0～127	55	--	--
S04	TINT	0～127	64	--	--
S05	DETAIL	0～63	37	--	35
S06	BRIGHT +-	-32～+32	--	+1	-2 [503] / ±0 [303, 203]
S07	PICT+-	-32～+32	--	-10	±0
S08	COLOR+-	-32～+32	--	-3	-2
S09	TINT+-	-32～+32	--	-3	+2
S10	DETAIL+-	-32～+32	--	±0	--

No	Setting item	Variable range	COMPONENT INPUT / STANDARD		
			AV-32D503 /Y AV-32D303 /Y AV-32D203 /Y	AV-32D503 /R AV-32D303 /R AV-32D203 /R	AV-32D503 /M AV-32D303 /M AV-32D203 /M
S03	COLOR	0～127	58	62	62
S04	TINT	0～127	78	68	70
S05	DETAIL	0～63	40	40	40
S06	BRIGHT +-	-32～+32	-1 [503] / -3 [303, 203]	-1 [503] / -3 [303, 203]	-1 [503] / -3 [303, 203]
S07	PICT+-	-32～+32	±0	±0	±0

No	Setting item	Variable range	RF / S-VIDEO / COMPOSITE VIDEO				COMPONENT INPUT			
			STANDARD		THEATER		STANDARD		THEATER	
			LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
S11	R CUT OFF	0～255	30	--	--	--	--	--	--	--
S12	G CUT OFF	0～255	30	--	--	--	--	--	--	--
S13	B CUT OFF	0～255	30	--	--	--	--	--	--	--
S14	R DRIVE	0～127	64	--	--	--	--	--	--	--
S15	B DRIVE	0～127	64	--	--	--	--	--	--	--
S16	R CUT+-	-128～+127	--	±0	±0	±0	-10	--	--	--
S17	G CUT+-	-128～+127	--	±0	±0	±0	±0	--	--	--
S18	B CUT+-	-128～+127	--	±0	±0	±0	-10	--	--	--
S19	R DRV+-	-128～+127	--	+5	+13	+7	±0	--	--	--
S20	B DRV+-	-128～+127	--	+6	-25	-9	±0	--	--	--
S21	NTSC MAT	0～3	3	3	1	1	2	2	1	1
S22	BLACK ST	0～3	1	--	1	--	--	--	--	--
S23	DCREST	0～1	1	--	1	--	--	--	--	--
S24	DCRSW	0～1	1	--	1	--	--	--	--	--

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No	Setting item	Variable range	RF	S-VIDEO COMPOSITE VIDEO	COMPONENT INPUT
S25	ASY SHRP	0～7	5	4	4
S26	BPF FO	0～1	0	0	--
S27	KILR OFF	0～1	0	0	--
S28	KILR SEN	0～1	1	1	--

No	Setting item	Variable range	Initial setting value	No	Setting item	Variable range	Initial setting value
S29	RGB MUTE	0～1	0	S39	Y MUTE	0～1	0
S30	BLUE B	0～1	0	S40	SVM GAIN	0～3	0
S31	VIDEO SW	0～3	3	S41	SVM PH	0～3	0
S32	CMP ABCL	0～1	0	S42	WPL	0～1	0
S33	OSD ABL	0～1	0	S43	COL GMM	0～1	0
S34	OSD CONT	0～63	10	S44	V1 GAIN	0～7	4
S35	SUB CONT	0～15	8	S45	AGC ADJ	0～127	63
S36	ABL GAIN	0～3	0	S46	VMOFF DE	-128～+127	±0
S37	ABL PNT	0～3	3	S47	APC CLK	0～1	1
S38	Y GAMMA	0～3	1				

SOUND MODE

No	Setting item	Variable range	Initial setting value	No	Setting item	Variable range	Initial setting value
A01	IN LEVEL	0～15	10	A04	SAPC	0 / 1	0
A02	LOW SEP	0～63	32	A05	BBE BASS	-128～+127	+3
A03	HI SEP	0～63	32	A06	BBE TRE	-128～+127	-4

3L Y / C MODE (Do not adjust)

No	Variable range	Initial setting value	No	Variable range	Initial setting value
LYC01	0～7	4	LYC07	0～1	1
LYC02	0～7	1	LYC08	0～3	0
LYC03	0～1	0	LYC09	0～1	1
LYC04	0～1	0	LYC10	0～1	0
LYC05	0～15	2	LYC11	0～1	0
LYC06	0～1	0	LYC12	0～1	0

DEF MODE

No	Setting item	Variable range	AV-32D503 /Y AV-32D303 /Y AV-32D203 /Y		AV-32D503 /R AV-32D303 /R AV-32D203 /R		AV-32D503 /M AV-32D303 /M AV-32D203 /M	
			RF	S-VIDEO COMPOSITE	RF	S-VIDEO COMPOSITE	RF	S-VIDEO COMPOSITE
D01	V FREQ	0～3	0	3	0	0	0	0
D02	AFC GAIN	0～3	0	2	0	0	0	0
D03	H POSI	0～31	16	16	16	16	16	16
D04	H POSI+-	-128～+127	--	--	--	--	--	--
D05	V PHASE	0～7	0	0	0	0	0	0
D06	V PH+-	-128～+127	--	--	--	--	--	--
D07	V SIZE	0～+127	70	70	70	70	70	70
D08	V SIZE+-	-128～+127	--	--	--	--	--	--
D09	V CENTER	0～63	32	32	32	32	32	32
D10	V CENT+-	-128～+127	--	--	--	--	--	--
D11	V S CORR	0～15	5	5	5	5	5	5
D12	V S CO+-	-128～+127	--	--	--	--	--	--
D13	V LIN	0～15	12	12	12	12	12	12
D14	V LIN+-	-128～+127	--	--	--	--	--	--
D15	H SIZE	0～63	32	32	32	32	32	32
D16	H SIZE+-	-128～+127	--	--	--	--	--	--
D17	WVMT TOP	0～3	0	0	0	0	0	0
D18	WVMT BTM	0～3	0	0	0	0	0	0
D19	EWCR TOP	0～31	12	12	12	12	12	12
D20	EWCR T+-	-128～+127	--	--	--	--	--	--
D21	EWCR BTM	0～31	15	15	15	15	15	15
D22	EWCR B+-	-128～+127	--	--	--	--	--	--
D23	EW PARA	0～63	36	36	36	36	36	36
D24	EW PARA+-	-128～+127	--	--	--	--	--	--
D25	V EHT	0～7	0	0	0	0	0	0
D26	V EHT+-	-128～+127	--	--	--	--	--	--
D27	H EHT	0～7	0	0	0	0	0	0
D28	H EHT+-	-128～+127	0	--	0	0	0	0
D29	TRAPEZ	0～63	35	35	35	35	35	35
D30	TRAPEZ+-	-128～+127	--	--	--	--	--	--
D31	V AGC	0～1	0	0	0	0	0	0
D32	BLANK SW	0～1	0	0	0	0	0	0
D33	VRMP BI	0～1	0	0	0	0	0	0

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OTHERS MODE

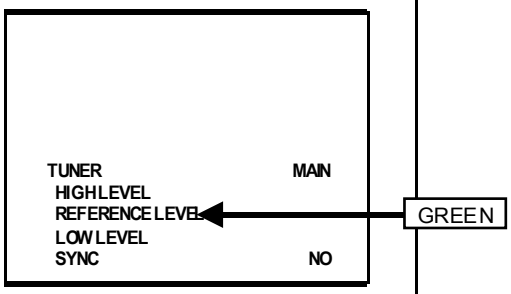
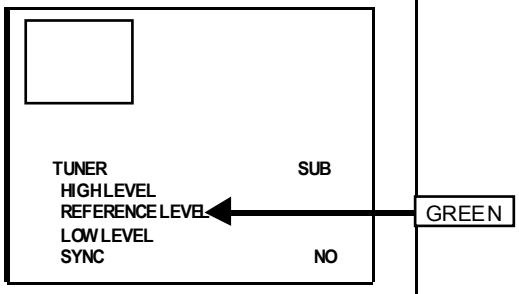
No	Variable range	Initial setting value	No	Variable range	Initial setting value
F01	0～15	37	F15	0～63	0
F02	0～15	90	F16	0～63	10
F03	0～15	45	F17	0～63	20
F04	0～15	93	F18	0～255	2
F05	0～63	7	F19	-128～+127	+8
F06	0～1	0	F20	-128～+127	-4
F07	0～63	2	F21	-128～+127	-10
F08	0～2	0	F22	-128～+127	-16
F09	0～255	5	F23	0～1	0
F10	0～255	5	F24	0～2	0
F11	0～255	16	F25	0～255	255
F12	0～63	32	F26	0～255	40
F13	0～255	3	F27	0～255	15
F14	0～255	5	F28	0～1	1

PIP MODE

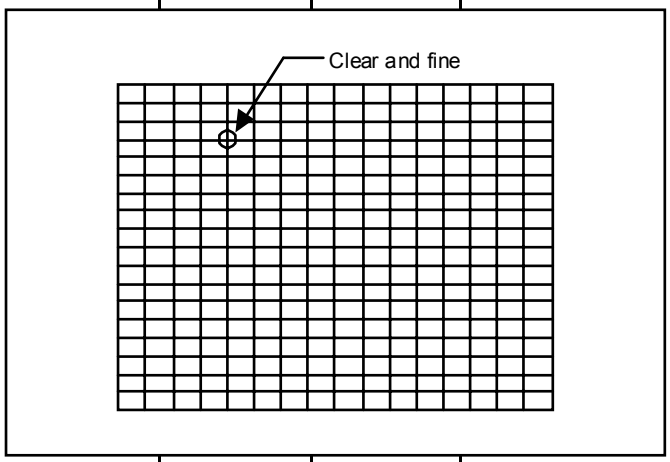
No	Setting item	Variable range	Initial setting value	No	Setting item	Variable range	Initial setting value
PIP01	BRIGHT	0～15	0	PIP28	MAT	0～1	1
PIP02	PICTURE	0～75	30	PIP29	YCOR	0～1	1
PIP03	TINT	0～63	42	PIP30	XFREQF	0～1	1
PIP04	COLOR	0～15	6	PIP31	WTCHDG	0～1	1
PIP05	R CUTOFF	0～15	0	PIP32	COLON	0～1	0
PIP06	G CUTOFF	0～15	0	PIP33	ACQNEW	0～1	0
PIP07	B CUTOFF	0～15	0	PIP34	DSTDET	0～1	1
PIP08	R DRIVE	0～255	63	PIP35	CRIBEOK	0～1	0
PIP09	G DRIVE	0～255	65	PIP36	FCBEOK	0～1	0
PIP10	B DRIVE	0～255	65	PIP37	NOCRID	0～1	0
PIP11	L POSI	0～255	22	PIP38	NONSED	0～1	0
PIP12	R POSI	0～255	15	PIP39	PIP ADJ	0～15	5
PIP13	UPR POSI	0～127	12	PIP40	BRI EXT	-128～+127	0
PIP14	LWR POSI	0～127	11	PIP41	PCT EXT	-128～+127	0
PIP15	PICT LCK	0～1	1	PIP42	TNT EXT	-128～+127	0
PIP16	SELDEL	0～15	0	PIP43	COR EXT	-128～+127	0
PIP17	AGCFIX	0～1	1	PIP44	R-D EXT	-128～+127	0
PIP18	AGCADST	0～1	0	PIP45	G-D EXT	-128～+127	0
PIP19	AGC	0～15	7	PIP46	B-D EXT	-128～+127	0
PIP20	BLKINVB	0～1	0	PIP47	BRT COMP	-128～+127	0
PIP21	BLKINVR	0～1	0	PIP48	PCT COMP	-128～+127	0
PIP22	VSPDEL	0～31	0	PIP49	TNT COMP	0～63	40
PIP23	VSPISQ	0～1	1	PIP50	COR COMP	0～15	5
PIP24	RGBIN	0～1	0	PIP51	R-D COMP	-128～+127	0
PIP25	FRSEL	0～1	1	PIP52	G-D COMP	-128～+127	0
PIP26	OUTFOR	0～1	0	PIP53	B-D COMP	-128～+127	0
PIP27	UVPOLAR	0～1	0				

ADJUSTMENTS

BASIC ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
Check of B1 power supply	**DC Voltmeter**	**1 : TP-91** **3 : TP-E(⏚)** **B1 connector**		1. Receive the black and white signal. (color off) 2. Connect the DC voltmeter to B1 connector 1 pin (TP-91) and TP-E(⏚). 3. Confirm that the voltage is DC134V±2V.
MAIN VCO adjustment 	**Remote control unit**		**VCO (MAIN)** **[SERVICE MENU]** **CW TRANSF.** **[MAIN PWB]**	● Under normal conditions, no adjustment is required. And it must not adjust without signal. 1. Receive the NTSC broadcast. 2. Select the 10 VCO mode from the SERVICE MENU. 3. It checks that turn the CW TRANSF. and the character of "HIGH LEVEL" changes the color. 4. Next, it check that turn the CW TRANSF. on the contrary and the color of "LOW LEVEL" changed. 5. At this time, it checks that "SYNC" is "YES". 6. Turn the CW TRANSF. and it is made for the character of "REFERENCE LEVEL" to become green. Again, it checks that "SYNC" is "YES".
SUB VCO adjustment **Only for AV-32D503** 	**Remote control unit**		**VCO (SUB)** **[SERVICE MENU]** **SUB CW TRANSF.** **[PIP PWB]**	● Under normal conditions, no adjustment is required. And it must not adjust without signal. 1. Receive the NTSC broadcast. 2. Push the PIP key on the remote control unit. And display any broadcast program in the PIP screen that difference from MAIN screen. 3. Select the **10 VCO** mode and switch the SUB mode by pressing the **CURSOR** ◀ / ▶ key. 4. It checks that turn the SUB CW TRANSF. and the character of "HIGH LEVEL" changes the color. 5. Next, it check that turn the SUB CW TRANSF. on the contrary and the color of "LOW LEVEL" changed. 6. At this time, it checks that "SYNC" is "YES". 7. Turn the SUB CW TRANSF. and it is made for the character of "REFERENCE LEVEL" to become green. Again, it checks that "SYNC" is "YES".

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>RF AGC adjustment</td><td>Remote control unit</td><td></td><td>S45 AGC ADJ
[V/C(S) mode]</td><td>1. Receive the broadcast.
2. Enter to the V/C(S) mode from SERVICE MENU.
3. Select the S45 AGC ADJ item.
4. Press the MUTING key and turn the color to off.
5. With the CURSOR ◀ key to get the noise in the screen picture (zero side of setting value).
6. Press the CURSOR ▶ key several times and step when noise disappears from the screen. At this time, not to increase the value too much.
7. Change to other channels and make sure that there is no irregularity.
8. Press the MUTING key and get color out.

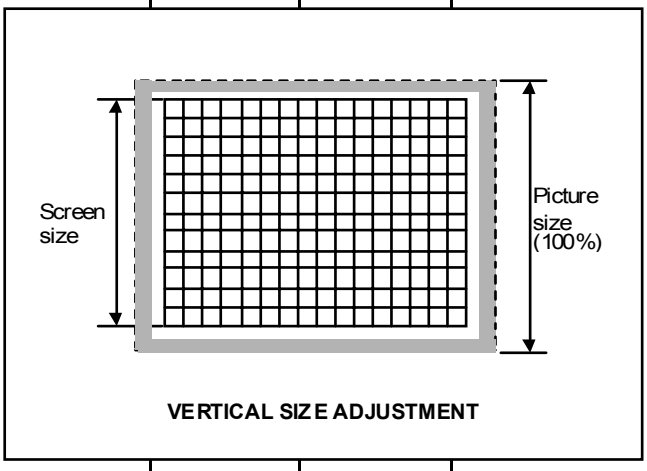
<table><tr><th>Adjustment item</th><th>Variable range</th><th>Initial setting value</th></tr><tr><td>S45 AGC ADJ</td><td>0～127</td><td>63</td></tr></table></td></tr>
<tr><td>FOCUS adjustment</td><td>Signal generator</td><td></td><td>FOCUS VR
[In FBT]</td><td>1. Receive the crosshatch signal.
2. While looking at the screen, adjust the FOCUS VR to the vertical and horizontal lines will be clear and make fine in a detail.
3. Make sure that the picture is in focus even when the screen gets darkened.</td></tr>
<tr><td colspan="4"> 
</td></tr>
</table>

DEFLECTION CIRCUIT ADJUSTMENT

The setting (adjustment) using the remote control unit is made on the basis of the initial setting values.
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.

Item	Measuring instrument	Test point	Adjustment part	Description
V. CENTER **V. SIZE** **adjustment**	**Signal generator** **Remote control unit**		**D05 V PHASE** **D07 V SIZE** **[DEF(D) mode]** **V. CENTER SW** **[MAIN PWB]**	1. Receive the crosshatch signal. 2. Enter to the DEF(D) mode from SERVICE MENU. 3. Select the **D05 V PHASE**, and it checks that the value of **D05 V PHASE** is 0. 4. Adjust the V. CENTER SW to become the signal center agree with the CRT vertical center. 5. Then adjust the **D07 V SIZE** to the vertical screen size become the values given below table (bottom of screen is to be located within the 85%～95% range).

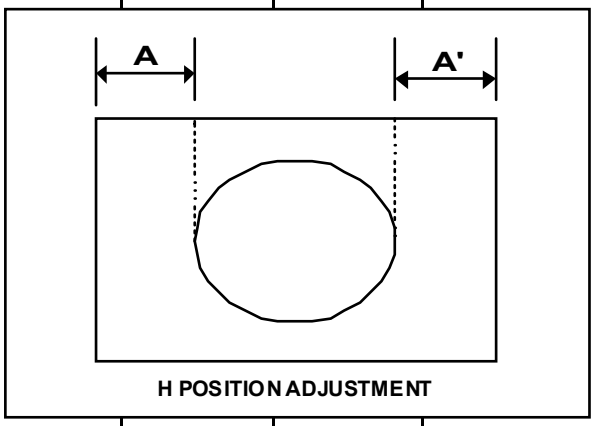
Adjustment item	Initial setting value		
	AV-32D503 /Y **AV-32D303 /Y** **AV-32D203 /Y**	**AV-32D503 /R** **AV-32D303 /R** **AV-32D203 /R**	**AV-32D503 /M** **AV-32D303 /M** **AV-32D203 /M**
D05 V PHASE	0	0	0
D07 V SIZE	70	70	70



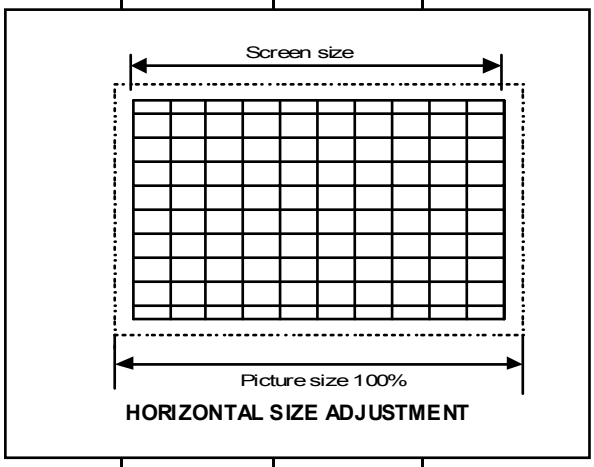
VERTICAL SIZE ADJUSTMENT

MODEL NAME	VERTICAL SCREEN SIZE
AV-32D503 /Y **AV-32D303 /Y** **AV-32D203 /Y**	92.0%
AV-32D503 /R **AV-32D303 /R** **AV-32D203 /R**	92.0%
AV-32D503 /M **AV-32D303 /M** **AV-32D203 /M**	92.0%

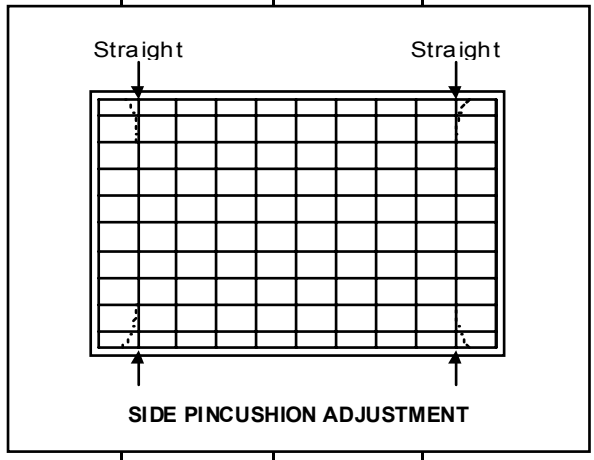
Item	Measuring instrument	Test point	Adjustment part	Description
H SIZE **H. POSITION** **SIDE** **PINCUSHION** **adjustment**	**Signal generator** **Remote control unit**		**D03 H POSITION** **D15 H SIZE** **D23 EW PARA** **D19 EWCR TOP** **D21 EWCR BTM** **[DEF(D) mode]**	1. Receive the crosshatch signal. 2. Adjust left-right center with **D03 H POSITION** to become screen center agree with CRT center (A=A' as shown in figure). 3. Adjust the horizontal size with **D15 H SIZE** to become the value given below. 4. Adjust the **D23 EW PARA** to the vertical lines become straight. 5. It check that, horizontal size is not illegal. 6. When the vertical lines of 4 corner does not turn into a straight, adjusts them with **D19 EWCR TOP** and **D21 EWCR BTM** to correctly.



H POSITION ADJUSTMENT



HORIZONTAL SIZE ADJUSTMENT



SIDE PINCUSHION ADJUSTMENT

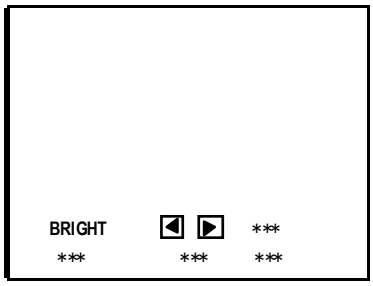
Adjustment item	Initial setting value		
	AV-32D503 /Y AV-32D303 /Y AV-32D203 /Y	AV-32D503 /R AV-32D303 /R AV-32D203 /R	AV-32D503 /M AV-32D303 /M AV-32D203 /M
D03 H POSITION	16	16	16
D15 H SIZE	32	32	27
D23 EW PARA	37	32	27
D19 EWCR TOP	13	13	13
D21 EWCR BTM	14	14	14

MODEL NAME	HORIZONTAL SCREEN SIZE
AV-32D503 /Y AV-32D303 /Y AV-32D203 /Y	92.0%
AV-32D503 /R AV-32D303 /R AV-32D203 /R	92.0%
AV-32D503 /M AV-32D303 /M AV-32D203 /M	92.0%

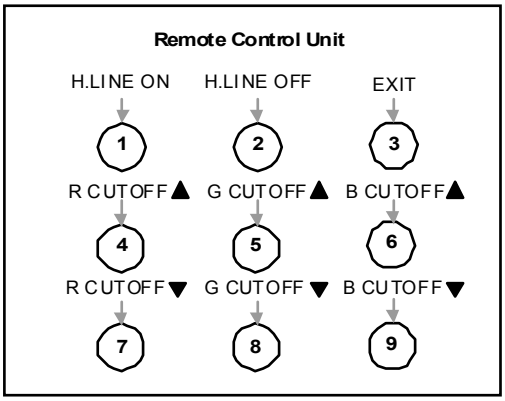
VIDEO / CHROMA CIRCUIT ADJUSTMENT

The adjustment using the remote control unit is made on the basis of the initial setting values.
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
Do not change the initial setting values not listed in "ADJUSTMENT".

Item	Measuring instrument	Test point	Adjustment item	Description
WHITE BALANCE (Low Light) adjustment	**Signal generator** **Remote control unit**		**LOW LIGHT BRIGHT (S01) [SERVICE MENU]** **R CUTOFF (S11)** **G CUTOFF (S12)** **B CUTOFF (S13)** **SCREEN VR [In HVT]**	1. Receive a black and white signal (color off). 2. Select the LOW LIGHT MODE from the SERVICE MENU. 3. Confirm the initial setting value of BRIGHT. 4. Confirm the initial setting value of R CUTOFF, G CUTOFF and B CUTOFF. 5. If they are differ, set the S01, S11, S12 and S13 to the correct initial setting value in the 1 V/C(S) mode. 6. Display a single horizontal line by pressing the ① key of the remote control unit. 7. Turn the screen VR all the way to the left. 8. Turn the screen VR gradually to the right from the left until either one of the red, blue or green colors appears faintly. 9. Use keys ④~⑨ of the remote control unit and adjust the other 2 colors which except the appeared color to where the single horizontal line appears white. 10. Turn the screen VR to where the single horizontal line glows faintly. 11. Press the ② key to release the single horizontal line. 12. Adjust the BRIGHT level to become the black component shines white slightly. 13. Confirm that whether the color ingredient of R, G or B is visible to the black component, which shines white slightly. 14. When the color ingredient can be seen, two colors other than a visible color are adjusted, and it is made to look white. 15. Return the value of BRIGHT to initial setting value. 16. Press the ③ key to exit the WHITE BALANCE MODE.



LOW LIGHT adjustment mode



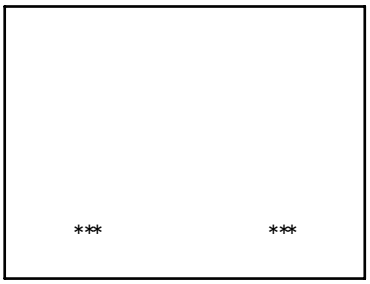
Adjustment item	Variable range	Initial setting value
BRIGHT	0~127	64

CUTOFF ADJUSTMENT	Variable range	Initial setting value
R CUTOFF (S11)	0 ~255	30
G CUTOFF (S12)	0 ~255	30
B CUTOFF (S13)	0 ~255	30

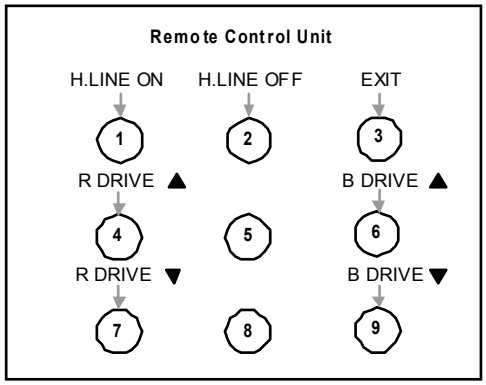
<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment item</th><th>Description</th></tr>
<tr><td>WHITE BALANCE (High Light) adjustment</td><td>Signal generator

Remote control unit</td><td></td><td>HIGH LIGHT
[SERVICE MENU]

R DRIVE (S14)
B DRIVE (S15)</td><td>1. Receive the NTSC black and white signal (color off).
2. Select the HIGH LIGHT mode in the SERVICE MENU.
3. Confirm the initial setting value of “G DRIVE” and “B DRIVE”.
4. If they are differ, set the S14 and S15 to the correct initial setting value in the 1 V/C(S) mode.
5. Adjust the screen color to white with the ④, ⑥, ⑦ and ⑨ keys of the remote control unit.

HIGH LIGHT adiustment

<table><tr><th>DRIVE ADJUSTMENT</th><th>Variable range</th><th>Initial setting value</th></tr><tr><td>R DRIVE (S14)</td><td>0 ～ 127</td><td>64</td></tr><tr><td>B DRIVE (S15)</td><td>0 ～ 127</td><td>64</td></tr></table></td></tr>
<tr><td>SUB BRIGHT adjustment</td><td>Remote control unit</td><td></td><td>S01 BRIGHT</td><td>● White balance (low light and high light) adjustment should be done.
1. Receive a NTSC broadcast.
2. Select the 1 V/C(S) mode from SERVICE MENU.
3. Select S01 BRIGHT of the V/C(S) mode in SERVICE MENU.
4. Confirm the initial setting value of the S01 BRIGHT.
5. If the brightness is not the best with the initial setting value, make fine adjustment of the S01 BRIGHT until you get the optimum brightness.

<table><tr><th>BRIGHT ADJUSTMENT</th><th>Variable range</th><th>Initial setting value</th></tr><tr><td>S01 BRIGHT</td><td>0 ～ 127</td><td>64</td></tr></table></td></tr>
<tr><td>SUB CONTRAST adjustment</td><td>Remote control unit</td><td></td><td>S02 PICTURE</td><td>● Bright adjustment should be done.
1. Receive a NTSC broadcast.
2. Select the 1 V/C(S) mode from SERVICE MENU.
3. Select S02 PICTURE of the V/C(S) mode in SERVICE MENU.
4. Confirm the initial setting value of the S02 PICTURE.
5. If the contrast is not the best with the initial setting value, make fine adjustment of the S02 PICTURE until you get the optimum contrast.

<table><tr><th>PICTURE ADJUSTMENT</th><th>Variable range</th><th>Initial setting value</th></tr><tr><td>S02 PICTURE</td><td>0 ～ 127</td><td>55</td></tr></table></td></tr>
</table>

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td rowspan="2">SUB COLOR adjustment</td><td>Remote control unit</td><td></td><td>S03 COLOR
[V/C(S) mode]</td><td>[Method of adjustment without measuring instrument]

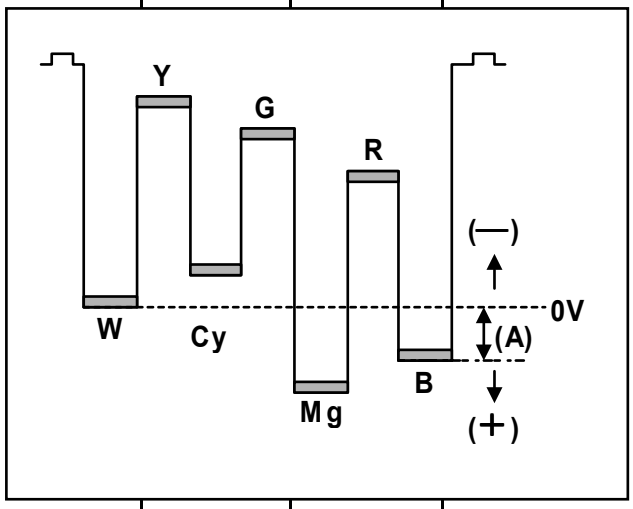
1. Receive the broadcast.
2. Select the 1 V/C(S) mode from SERVICE MENU.
3. Select S03 COLOR of the V/C(S) mode.
4. Confirm the initial setting value of the S03 COLOR.
5. If the color is not the best with the Initial setting value, make fine adjustment of the S03 COLOR until you get the optimum color.

<table><tr><th>Adjustment item</th><th>Initial setting value</th></tr><tr><td>S03 COLOR</td><td>55</td></tr></table></td></tr>
<tr><td>Signal generator

Oscilloscope

Remote control unit</td><td>TP-B
TP-E(⏚)
[CRT SOCKET PWB]</td><td>S03 COLOR
[V/C(S) mode]</td><td>[Method of adjustment using measuring instrument]

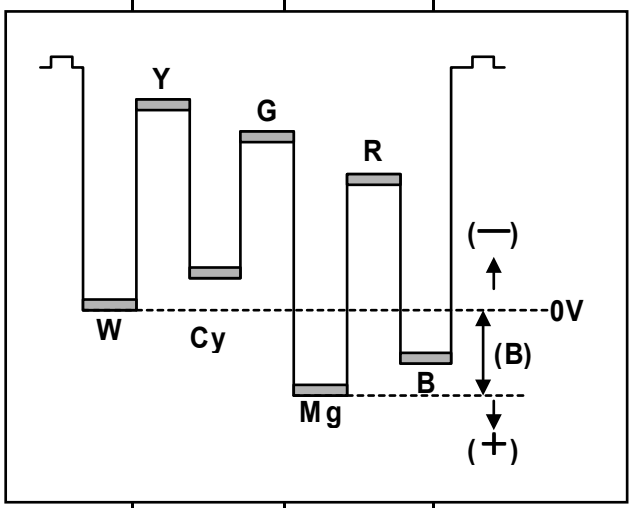
1. Input the full color bar signal includes the 75% white.
2. Select the 9 RF AFC mode from SERVICE MENU.
3. Turn the AFC item to off, and exit to the SERVICE MAIN MENU.
4. Select the 1 V/C(S) mode from SERVICE MENU.
5. Select S03 COLOR of the V/C(S) mode.
6. Confirm the initial setting value of the S03 COLOR given above.
7. Connect the oscilloscope between TP-B and TP-E.
8. Adjust S03 COLOR and bring the value of (A) in the illustration to the voltage shown in the table bellow (voltage difference between white and blue).
9. Exit to the SERVICE MAIN MENU.
10. Select the 9 RF AFC mode.
11. Turn the AFC item to on.

<table><tr><th>MODEL NAME</th><th>Voltage difference [V]</th></tr><tr><td>AV-32D503 /Y
AV-32D303 /Y
AV-32D203 /Y</td><td>+20V</td></tr><tr><td>AV-32D503 /R
AV-32D303 /R
AV-32D203 /R</td><td>+18V</td></tr><tr><td>AV-32D503 /M
AV-32D303 /M
AV-32D203 /M</td><td>+20V</td></tr></table></td></tr>
</table>

Item	Measuring instrument	Test point	Adjustment part	Description
SUB TINT adjustment	**Remote control unit**		**S04 TINT [V/C(S) mode]**	**[Method of adjustment without measuring instrument]** 1. Receive the broadcast. 2. Select the 1 V/C(S) mode from SERVICE MENU. 3. Select **S04 TINT** of the V/C(S) mode. 4. Confirm the initial setting value of the **S04 TINT**. 5. If the tint is not the best with the Initial setting value, make fine adjustment of the **S04 TINT** until you get the optimum color.
	Signal generator **Oscilloscope** **Remote control unit**	**TP-B** **TP-E(⏚)** **[CRT SOCKET PWB]**	**S04 TINT [V/C(S) mode]**	**[Method of adjustment using measuring instrument]** 1. Input the full color bar signal includes the 75% white. 2. Select the 9 RF AFC mode from SERVICE MENU. 3. Turn the AFC item to off, and exit to the SERVICE MAIN MENU. 4. Select the 1 V/C(S) mode from SERVICE MENU. 5. Select **S04 TINT** of the V/C(S) mode. 6. Confirm the initial setting value of the **S04 TINT** given above. 7. Connect the oscilloscope between TP-B and TP-E. 8. Adjust **S04 TINT** and bring the value of **(B)** in the illustration to the voltage shown in the table bellow (voltage difference between white and magenta). 9. Exit to the SERVICE MAIN MENU. 10. Select the 9 RF AFC mode. 11. Turn the AFC item to on.

Adjustment item	Initial setting value
S04 TINT	64



MODEL NAME	Voltage diference [V]
AV-32D503 /Y **AV-32D303 /Y** **AV-32D203 /Y**	+12V
AV-32D503 /R **AV-32D303 /R** **AV-32D203 /R**	+2V
AV-32D503 /M **AV-32D303 /M** **AV-32D203 /M**	+4V

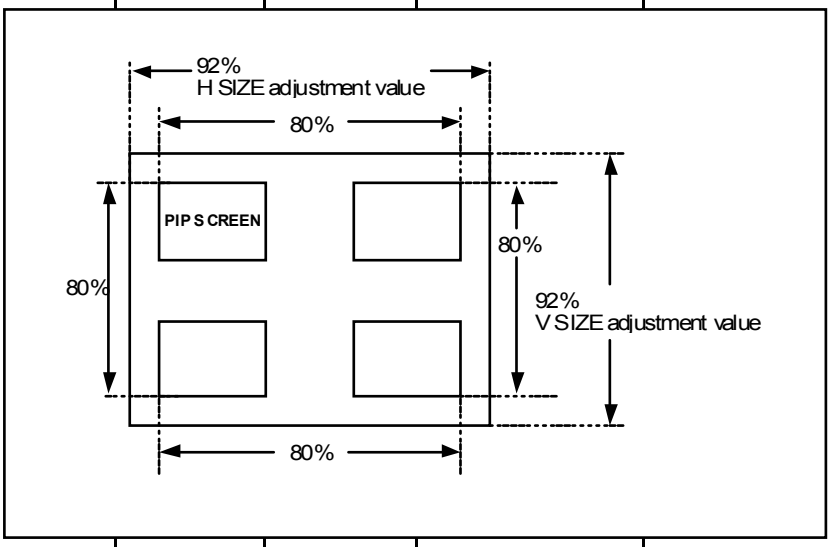
PIP CIRCUIT ADJUSTMENT [Only for AV-32D503]

Item	Measuring instrument	Test point	Adjustment part	Description
PIP WHITE BALANCE adjustment (HIGH LIGHT)	**Signal generator** **Remote control unit**		**PIP08 R DRIVE** **PIP10 B DRIVE** **[PIP(PIP) mode]**	1. Receive the black and white signal (color off). 2. Select the **5 PIP** mode from SERVICE MENU. 3. Select the **PIP08 R DRIVE, PIP10 B DRIVE** of the PIP mode. 4. Confirm the initial setting values of **PIP08** and **PIP10**. 5. Adjust the **PIP08 R DRIVE, PIP10 B DRIVE** until the screen becomes white.
PIP DISPLAY POSITION adjustment	**Signal generator** **Remote control unit**		**PIP11 L POSI** **PIP12 R POSI** **PIP13 UPR POSI** **PIP14 LWR POSI** **[PIP(PIP) mode]**	1. Receive the black and white signal (color off). 2. Select the **5 PIP** mode from SERVICE MENU. 3. Select the **PIP11 L POSI** of the PIP mode. 4. Confirm the initial setting value of the **PIP11 L POSI～PIP14 LWR POSI**. 5. Adjust the **PIP11～PIP14** to become the each PIP screen outside edges positioned about the left mentioned values from screen edge.

Adjustment item	Initial setting value
PIP08 R DRIVE	63
PIP10 B DRIVE	65

Adjustment position	Adjustment value [Screen size
UPPER WIDTH	80%
LOWER WIDTH	80%
LEFT WIDTH	80%
RIGHT WIDTH	80%

Adjustment item	Initial setting value
PIP11 L POSI	22
PIP12 R POSI	15
PIP13 UPR POSI	12
PIP14 LWR POSI	11



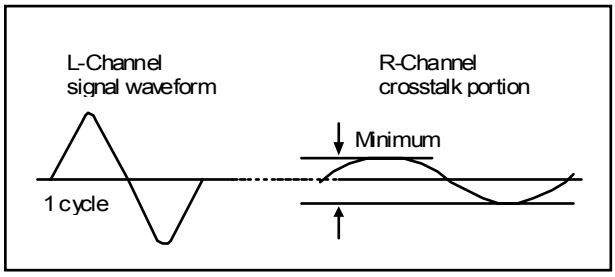
MTS CIRCUIT ADJUSTMENT

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>MTS INPUT LEVEL check</td><td>Remote control unit</td><td></td><td>A01 IN LEVEL [SOUND(A) mode]</td><td>1. Select the A01 IN LEVEL of the SOUND mode.
2. Verify that the A01 IN LEVEL is set at its initial setting value.

<table><tr><th>Adjustment item</th><th>Initial setting value</th></tr><tr><td>A01 IN LEVEL</td><td>10</td></tr></table></td></tr>
<tr><td>MTS SEPARATION adjustment</td><td>TV audio multiplex signal generator

Oscilloscope

Remote control unit</td><td>R OUT
L OUT
[AUDIO OUT]</td><td>A02 LOW SEP
A03 HI SEP</td><td>1. Input the stereo L signal (300Hz) from the TV audio multiplex signal generator to the antenna terminal.
2. Connect an oscilloscope to R OUT pin of the AUDIO OUT, and display one cycle portion of the 300Hz signal.
3. Select the A02 LOW SEP of the SOUND MODE.
4. Confirm the initial setting value of the A02 LOW SEP.
5. Adjust the A02 LOW SEP so that the stroke element of the 300Hz signal will become minimum.
6. Change the connection of the oscilloscope to L OUT pin of the AUDIO OUT, and enlarge the voltage axis.
7. Change the signal to 3kHz, and similarly adjust the A03 HI SEP.

<table><tr><th>Adjustment item</th><th>Initial setting value</th></tr><tr><td>A02 LOW SEP</td><td>32</td></tr><tr><td>A03 HIGH SEP</td><td>32</td></tr></table></td></tr>
</table>

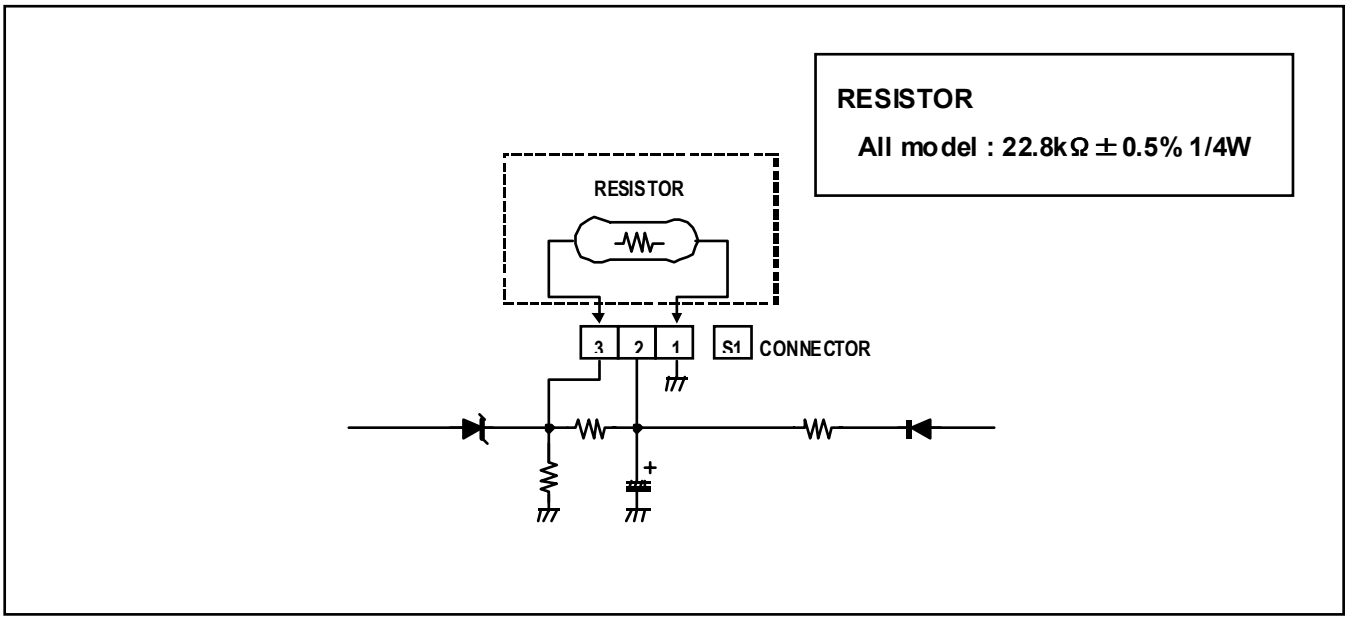
HOW TO CHECK THE HIGH VOLTAGE HOLD DOWN CIRCUIT

1. HIGH VOLTAGE HOLD DOWN CIRCUIT

After repairing the high voltage hold down circuit.
This circuit shall be checked to operate correctly.

2. CHECKING OF THE HIGH VOLTAGE HOLD DOWN CIRCUIT

(1) Turn the power switch on.
(2) As shown in figure, set the resistor (between【S1】connector【2】and【3】).
(3) Make sure that the screen picture disappears.
(4) Temporarily unplug the power plug.
(5) Remove the resistor (between【S1】connector【2】and【3】).
(6) Again plug the power plug, make sure that the normal picture is displayed on the screen.



REPLACEMENT OF CHIP COMPONENT

■ CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

■ SOLDERING IRON

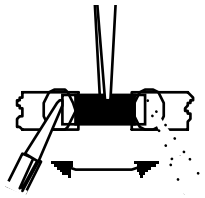
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30w soldering iron is recommended for easily removing parts.

■ REPLACEMENT STEPS

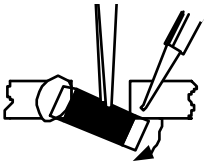
1. How to remove Chip parts

◆ **Resistors, capacitors, etc**

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

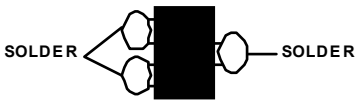


(2) Shift with tweezers and remove the chip part.

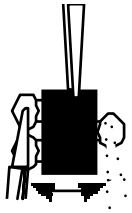


◆ **Transistors, diodes, variable resistors, etc**

(1) Apply extra solder to each lead.



(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

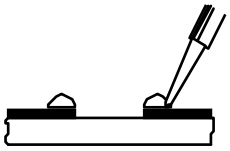


Note : After removing the part, remove remaining solder from the pattern.

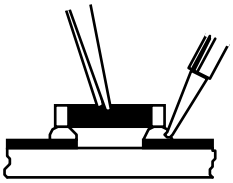
2. How to install Chip parts

◆ **Resistors, capacitors, etc**

(1) Apply solder to the pattern as indicated in the figure.

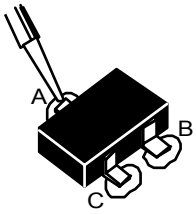


(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.



◆ **Transistors, diodes, variable resistors, etc**

(1) Apply solder to the pattern as indicated in the figure.
(2) Grasp the chip part with tweezers and place it on the solder.
(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.